

## **REMARKS**

Applicant appreciates the Examiner's thorough examination of the subject application and request reexamination and reconsideration of the subject application in view of the following remarks.

### **Claim Status/Amendment**

Claims 1, 7 and 9 have been amended; claims 1-14 are pending in this application. No new matter is introduced by the amendments to claims 1, 7 and 9.

### *Specification*

The abstract of the disclosure is objected to because of improper language and format. In this response, the Applicant has accepted the Examiner's suggestion to amend the abstract. The abstract is now believed to satisfy the requirement as set forth in MPEP§ 608.01(b).

### *Claim Objections*

Claims 7 and 9 are objected to because of the informalities. In this response, the Applicant has followed the Examiner's kind suggestions to cure the informalities. The informalities in Claims 7 and 9 now have been removed and withdrawal of the objections is respectfully requested.

### *Claim Rejections*

Claims 1, 2 and 4-14 are rejected under 35 U.S.C 103(a) as being unpatentable over **Seo** et al (English- to-Korean Caption Translation System using the Sentence Pattern, 2001) in view of **Bernth** et al. (US Patent 6,285,978) and **Roh** et al. (Long Sentence Partitioning using Structure Analysis for Machine Translation, November 2001). Applicant traverses the rejection for the following reasons.

It is submitted that none of the reference document, *Seo*, *Bernth* and *Roh* or the combination thereof, disclose all the features of the claimed invention, such as, extracting only a chunking result of phrases belonging to sub-category of verb in the parsing tree to generate a construction pattern that represents an entire sentence consisting of the parts of speech, and analyzing a clause unit structure of the construction pattern if the translation pattern matching to the construction pattern fails.

As per claim 1, Applicant has introduced a further limitation to more reasonably consummate the scope of “construction pattern”. Please see the amendment for details. The Applicant submits that this limitation is fully supported by the description of present application. See page 2 paragraph [0026] for example.

*Seo*, *Bernth* and *Roh* taken either individually or in combination fail to disclose all claimed features of claim 1, such as, a construction pattern generating block for extracting only a chunking result of phrases belonging to sub-category of verb in the parsing tree to generates a construction pattern that represents an entire sentence consisting of parts of speech, and a clause structure analyzing block for analyzing a clausal structure of the construction pattern if the translation pattern matching of the construction pattern fails.

*Seo* discloses a translation system which generates a sentence pattern by partial parsing between predetermined parts of speech. Nowhere does *Seo* teach or suggest a parsing performed on the whole sentence and sub-category of verb (sentence nodes dependent on verb) that are extracted to generate a sentence pattern. As described under sub-title 2. *System configuration*, protectors are detected, which are consisting of ‘verb’, ‘aux’, ‘conj’ and ‘punct’; then phrase between protectors is parsed and is reduced to phrase symbols; the resulting symbol is encoded to the key word in source sentence pattern database. If key word searching in database fails, the partial pattern corresponding to simple sentence is recognized and is translated. Accordingly, *Seo* divides a sentence into phrases by ‘verb’, ‘aux’, ‘conj’ and ‘punct’, encoding the phrases and matching the coded phrases with partial patterns saved in a database. Thus, *Seo* merely involves partial parsing and fails to disclose a construction pattern.

*Bernth* discloses a method for language translation that dividing natural language text into segments. However, *Bernth* apply a simple approach that is using punctuations as a clue to

divide sentences (Line 47-53, Column 7). In fact, nowhere does **Bernth** teach or suggest extracting only a chunking result of phrases belonging to sub-category of verb in the parsing tree to generate a construction pattern.

As applied by the examiner, **Bernth** mentions lexical choice taken into consideration the lexical analyses per word (Col 11, line 16-30). In fact, Bernth discloses considering the lexical for the purpose of determining the correct lexical choices for each word in the input segment, and that is nothing to do with generating a construction pattern. Thus, **Bernth** fails to disclose extracting only a chunking result of phrases belonging to sub-category of verb in the parsing tree to generate a construction pattern that represents an entire sentence consisting of the parts of speech.

**Roh** merely discloses partitioning long sentence to phrase-level and using phrase-level patterns to translate phrases that constitute sentence (See 4.2 Recognition of Clauses).

As described in the instant applicaiton, segmentation of long and complicated sentences is most critical for automatic translation method, and different approaches of segmentation determines different translation methods. None of **Seo**, **Bernth** and **Roh** applies the same approach of segmentation as the claimed invention. Thus, their translation processes are different from that of the claimed invention.

In addition, although it can be considered that the clausal structure based partial sentence pattern matching method of Seo is similar to the clause structure analysis of Roh (Long sentence partitioning), the partial sentence pattern matching of Seo can be performed only on simple sentence. However, in the present invention, pattern matching can be sequentially performed on main and subordinate clauses of a sentence.

Referring to a sentence example: “We’re told to look for an announcement under which the Russians would temporarily participate in the NATO command structure while the political leaders, including the two presidents when they speak today, try to work out the arrangements for a much broader Russian participation in the peacekeeping force”, the sentence can be analyzed into a sentence pattern: nViVniCnVpCnTpCnVTViVnp.

The clausal structure of the sentence pattern can be analyzed into nViVniC((nVp)C(nT(pC(nV))TViVnp))). As to Seo, if it fails to perform sentence pattern matching on the whole sentence, the sentence pattern matching may be performed on nVp, nV and nViVniCsCnTpCsTViVnp. However, in the present invention, sentence pattern matching can be performed on VpCnTpCnVTViVnp and nViVniCs.

Based on the afore-mentioned reasons, claim 1 is believed to be patentable over *Seo*, *Bernth* and *Roh*, and withdrawal of the rejection of claim 1 is respectfully requested.

As per claims 2-6, since claims 2-6 are dependent on claim 1, claims 2-6 are considered patentable for at least the reasons afore-mentioned with respect to claim 1, and withdrawal of the rejection of claims 2-6 is respectfully request.

In addition, the Applicant disagree with the Examiner's position with respect to claims 4 and 8 with traverse. As applied by the Examiner, *Bernth* mentions the sentence length 450 take into consideration the length of a segment. However, *Bernth* would take the length of a segment into consideration for the purpose of evaluating the quality of the translation, and if the evaluating result is lower than a threshold, *Bernth* will not divide an input source into segments again. In *Bernth*, the length of the segment is nothing to do with the division/partitioning of the segments. In contrast, *Bernth* will introduce one more segment into the translation/evaluation system, and another one more segment, until the result is above the threshold to put system into another step of evaluation; if there are no more segments, the evaluation process will be terminated (Col 8, Line 1-6 and Figure 2). Thus, *Bernth* fails to disclose the claimed features of claims 4 and 8.

As per claim 7, Applicant has introduced a further limitation to reasonably consummate the scope of construction pattern, and that is believed to be fully supported by the description of present application. Claim 7 is directed to hybrid automatic translation method that includes the similar features as claim 1. Thus, claim 7 is considered patentable for at least the same reasons advanced with respect to claim 1, and withdrawal of the rejection of claim 7 is respectfully request.

As per claims 8-14, since claims 8-14 are dependent on claim 1, claims 8-14 are considered patentable for at least any relevant reason advanced with respect to claim 1, and withdrawal of the rejection of claims 8-14 is respectfully request.

Claim 3 is rejected under *35 U.S.C 103(a)* as being unpatentable over **Seo** et al (English-to-Korean Caption Translation System using the Sentence Pattern, 2001) in view of **Bernth** et al. (US Patent 6,285,978) and **Roh** et al. (Long Sentence Partitioning using Structure Analysis for Machine Translation, November 2001). Since claim 3 is dependent on claim 1, claim 3 is considered patentable for at least any relevant reason advanced with respect to claim 1. Thus, the Applicant respectfully requests withdrawal of the rejection of claim 3.

### **Conclusion**

Accordingly, Applicants respectfully submit that in light of the foregoing amendments. The application is now in condition for allowance. Reconsideration and allowance of the present application are respectfully requested.

In the event the Examiner deems personal contact desirable to facilitate disposition of this application, the Examiner is respectfully requested to call the undersigned attorney. Further, if these papers are not considered timely filed, then a petition is hereby made under 37 C.F.R. 1.136 for the necessary extension of time. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 07-1337 and please credit any excess fees to such deposit account.

Respectfully submitted,  
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